REMARKS

Claims 1-21 are pending in the application.

Claims 14-16 and19-21 were rejected under 35 U.S.C. 112, second paragraph.

Claims 1-13, 15-17, 19-21 were rejected under 35 U.S.C. 102.

Claims 1-17, 19-21 were rejected under 35 U.S.C. 103(a).

Claims 1, 8, 14-16, and19-21 herewith are amended.

Reconsideration and allowance of the claims as amended is requested for the following reasons.

The present invention is directed to a method of making a feedstock for injection molding composites, including the steps of:

a) mixing at a temperature of 100-150° C polymeric materials having a thermal conductivity in the range of 0.001 to 0.01 cal/cm-sec-° C wherein the polymeric materials are selected from the group consisting of polyethylene, polystyrene, polyester, and polycarbonate or combinations thereof, and one or more materials selected from the group consisting of ceramics, ceramic composites, metals and metal alloys in a blended relationship to form a viscous phase mixture, the materials in the viscous phase mixture being selected so that when in a solid phase it has a density greater than 4 grams/cc and a thermal conductivity greater than 0.101 cal/cm-sec-° C for usage as the feedstock for an injection molded composite, said injection molded composite comprising the polymeric materials and the ceramics, ceramic composites, metals and metal alloys from above; and

b) cooling the blended viscous phase mixture to form the feedstock.

<u>The 112 Rejections</u>

With regard to claims 14-16 and 19-21, the Examiner states that the claims are indefinite, because language used in said claims did not exactly match established language of an acceptable Markush group. Consequently, the Applicants have amended claims 14-16 and 19-21 to constitute proper limitations of enclosed alternative expressions of claimed

features. It is believed, therefore, that claims 14-16 and 19-21 now meet the requirements of 35 USC 112.

The 102 Rejections

Kimura shows a method of making a feedstock for injection molding ceramic products, i.e., the final product is ceramic. The Applicants are not merely claiming the process of making conventional feedstock, but do claim specific type of feedstock for injection molded composite pieces having unique thermal conductivity properties and density over 4 grams/cc. Polymers, in general, are very lightweight (e.g., density is around 1 g/cc) and have very poor thermal conductivities (T.C.). Therefore, it is very difficult to injection mold a polymer without adding any foreign materials to improve the T.C. The Applicants' invention relates to improving the T.C. of a polymer, wherein the T.C. is in the range of 0.001 to 0.01 cal/cm-sec°C to greater than 0.101 cal/cm-sec°C, which is an improvement of a few orders of magnitude. The Applicants also improve the density of a polymer from about 1 g/cc to greater than about 4 g/cc. The Applicant's address the problem of manufacturing injection molded polymer composites which will feel heavy and have higher T.C., like metals or ceramics, and that have higher tactile properties.

Kimura is making feedstock by blending ceramic particles with organic binders such as polymers. After the injection molding process, the part is sintered wherein all the polymers are burned away so that the final product is ceramic. (See, col. 5, line 63-col. 6, line 7) Kimura claims specifically injection molding zirconia ceramics. The Examiner should not speculate that the feedstock made by Kimura will have a T.C higher than 0.101 cal/cm-sec°C, because the main ingredient is zirconia which is known to have very low T.C. Accordingly, the Applicants ask the Examiner to produce prior art that shows zirconia having a T.C higher than 0.101 cal/cm-sec°C. In the alternative, the Applicants have included a reference ("Modern Ceramic Engineering" by David W. Richerson) that shows the T.C. of zirconia oxide being well below 0.101 cal/cm-sec°C. The density of the Kimura injection molded part is 6 g/cc (higher than 4 g/cc), because that part is not a polymer composite as claimed by Applicants, but a simple ceramic (zirconia) piece.

The Applicants have amended independent claims 1 and 8 to more clearly emphasize the feature of making a blended feedstock that will enable one to make an injection molded composite without sintering or burning off the organic binder as disclosed in the prior art. Support for the amendment can be found in Applicant's specification on page 2, lines 25-30 and Fig. 1.

The claim is novel because at least one of Applicants' features is missing in the cited art. Applicants, therefore, respectfully request that the Examiner reconsider and withdraw the rejection of the claims under 35 U.S.C. 102(b).

The 103 Rejections

All of the above reasoning regarding Kimura and Applicants' invention is incorporated herein as well. Kimura does not teach, suggest, or show the making of blended feedstock that will yield an injection molded composite. Consequently, the Examiner has failed to make a prima facie case, because at least one of Applicants' features is missing in the cited Kimura reference. Moreover, Kimura acknowledges the same recognized differences between ceramics and plastics that the Applicants are attempting to eliminate. (See, col. 1, line 53-to- col. 2, line 4). Also disclosed is the fact that certain particle shapes, average particle size, and specific surface area are well suited for injection molding. (See col. 1, ll. 64-67 and col. 2, ll. 16- 22). The Applicants have none of these restrictions. Hence, for independent claims 1 and 8 the cited art of Kimura actually teaches against Applicants claimed invention, because Kimura requires burning away the organic binders; whereas, the Applicants use the organic binders to more closely approach the higher tactile properties heretofore only associated with metals or ceramics.

It is believed that independent claims 1 and 8 are unobvious in light of Kimura. The remainder of the claims are dependent from these claims and are considered to be patentable for at least the same reasons.

Applicants have reviewed the cited art made of record, including Taniguchi et al. and believe that singly or in any suitable combination, they do not render Applicants' claimed invention

unpatentable. It is believed that the claims in the application are allowable over the cited art and such allowance is respectfully requested.

Should the Examiner consider that additional amendments are necessary to place the application in condition for allowance, the favor is requested of a telephone call to the undersigned counsel for the purpose of discussing such amendments.

Respectfully submitted,

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Marcel Dekker, Inc. **New York • Basel • Hong Kong**

Library of Congress Cataloging-in-Publication Data

Richerson, David W.
Modern ceramic engineering : properties, processing, and use in design / David W. Richerson. -- 2nd ed., rev. and expanded.
p. cm. -- (Engineered materials)
Includes index.
ISBN 0-8247-8634-3
1. Ceramics. I. Title. II. Series.
TP807.R53 1992
666--dc20
91-39606
CIP

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MARCEL DEKKER, INC.
270 Madison Avenue, New York, New York 10016

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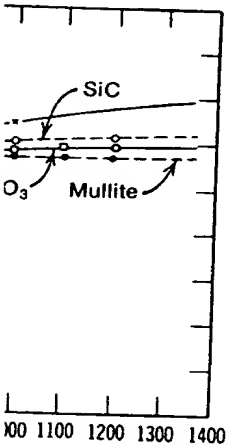

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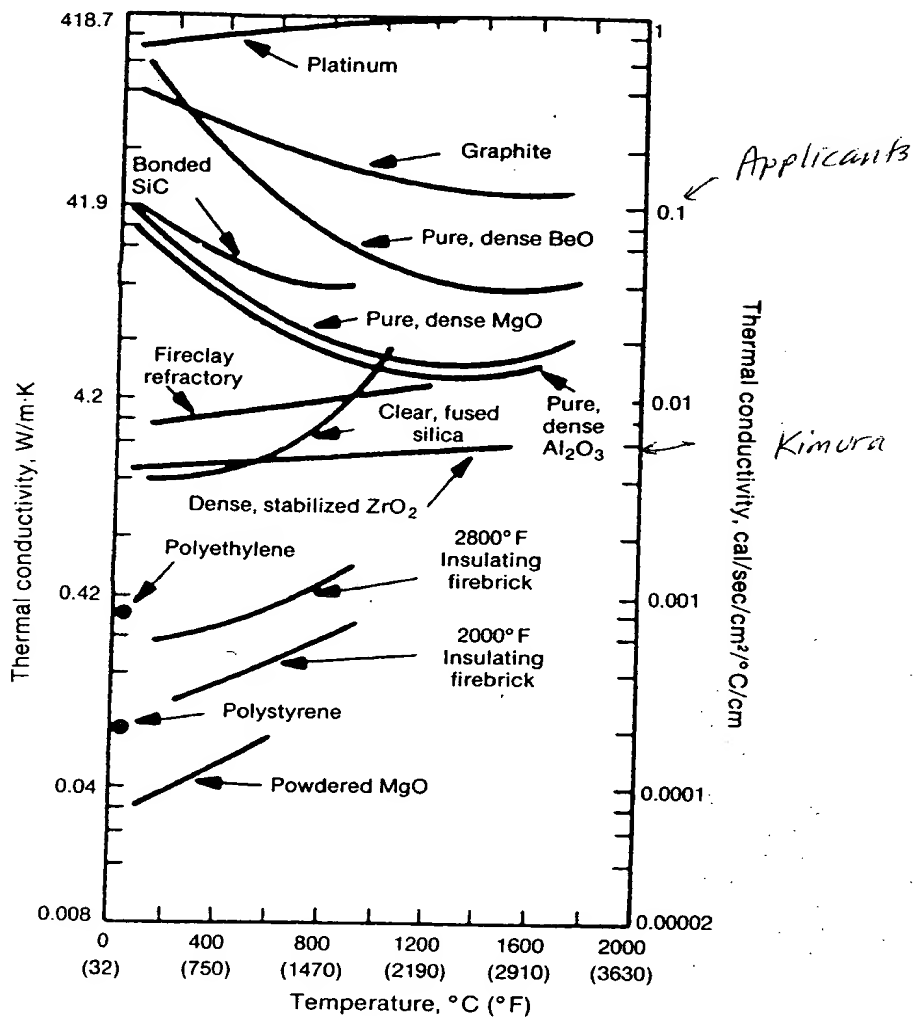

Figure 4.3 Thermal conductivity versus temperature for a variety of ceramic, metallic, and organic materials. (Adapted from Ref. 4, p. 643, plus data from Ref. 5.)